

CLAIMS

I claim:

- 1 1. An exhaust sound and emission control system,
2 comprising:
3 a housing having a housing wall, an exhaust inlet end, and
4 an exhaust outlet end opposite said exhaust inlet end;
5 a plurality of spaced apart, generally V-shaped guides
6 disposed within said housing, adjacent said exhaust inlet end
7 thereof; and
8 a plurality of generally parallel, non-concentric tubes
9 disposed longitudinally within said housing, beside one another.

1 2. The exhaust sound and emission control system according
2 to claim 1, further including:

3 an inlet end plate disposed within said exhaust inlet end of
4 said housing;

5 an outlet end plate disposed within said exhaust outlet end
6 of said housing;

7 a baffle plate disposed longitudinally within said housing,
8 extending from said inlet end plate and laterally across said
9 housing wall, defining a first inlet volume and a second inlet
10 volume;

11 said V-shaped guides extending across said first inlet
12 volume from said baffle plate to said housing wall, and normal
13 thereto;

14 a first tube set extending from said v-shaped guides to said
15 outlet end plate; and

16 a second tube set extending from said second inlet volume to
17 said outlet end plate.

1 3. The exhaust sound and emission control system according
2 to claim 2, wherein at least said inlet end plate further
3 includes a plurality of perforations therethrough.

1 4. The exhaust sound and emission control system according
2 to claim 2, wherein said first tube set comprises at least a
3 first tube surrounding a second tube.

1 5. The exhaust sound and emission control system according
2 to claim 2, further including at least one gas flow crossover
3 line connecting at least one of said tubes of said first tube set
4 with at least one of said tubes of said second tube set.

1 6. The exhaust sound and emission control system according
2 to claim 1, further including at least one gas flow crossover
3 line connecting at least one of said tubes with another of said
4 tubes.

1 7. The exhaust sound and emission control system according
2 to claim 1, wherein said tubes are of different diameters and
3 lengths from one another.

1 8. The exhaust sound and emission control system according
2 to claim 1, wherein said tubes further include a plurality of
3 perforations therethrough.

1 9. The exhaust sound and emission control system according
2 to claim 1, further including:

3 an exhaust outlet collector tube having an interior end with
4 an interior end opening, a medial portion, and an exterior end
5 opposite said interior end, with said medial portion disposed
6 through said exhaust outlet end of said housing; and

7 said interior end of said exhaust outlet collector tube
8 being curved, with said interior end opening being beveled and
9 positioned adjacent and generally parallel to said housing wall.

1 10. The exhaust sound and emission control system according
2 to claim 1, further including at least one catalytic converter
3 element disposed within said inlet end of said housing.

1 11. The exhaust sound and emission control system according
2 to claim 1, further including a plurality of catalytic converter
3 elements disposed within said inlet end of said housing.

1 12. The exhaust sound and emission control system according
2 to claim 1, wherein said housing further comprises:

3 an outer wall; and

4 an inner wall spaced from said outer wall, and defining an
5 acoustic insulation volume therebetween.

1 13. The exhaust sound and emission control system according
2 to claim 12, further including acoustic insulation material
3 disposed within said acoustic insulation volume between said
4 outer wall and said inner wall.

1 14. The exhaust sound and emission control system according
2 to claim 1, further including a removable exhaust inlet end
3 attachment fitting, removably securing said exhaust inlet end to
4 said housing.

1 15. The exhaust sound and emission control system according
2 to claim 1, further including removable exhaust inlet end and
3 exhaust outlet end attachment fittings, respectively removably
4 securing said exhaust inlet end and said exhaust outlet end to
5 said housing.

1 16. An exhaust sound and emission control system,
2 comprising:

3 a canister for installing in the exhaust system of an
4 internal combustion engine, with said canister including an inlet
5 end, a forward portion adjacent said inlet end, a rearward portion
6 adjacent said forward portion, an outlet end adjacent said
7 rearward portion, a forward inner diameter, and a rearward inner
8 diameter;

9 at least one catalytic converter element installed within
10 said forward portion of said canister, with said catalytic
11 converter element having an outer diameter and including a
12 substrate having a plurality of longitudinal passages
13 therethrough, with each of said passages being defined by a
14 plurality of substrate walls;

15 a resonator element installed within said rearward portion of
16 said canister, with said resonator element having a hollow core, a
17 forward end, a rearward end, an outer diameter, and a plurality of
18 sound attenuating perforations formed radially therethrough;

19 said outer diameter of said resonator element being smaller
20 than said rearward inner diameter of said canister, and defining a
21 sound attenuating plenum therebetween;

22 said inlet end of said canister, said plurality of passages
23 of said catalytic converter element, said hollow core of said
24 resonator element, and said outlet end of said canister all being
25 axially aligned with one another for providing straight through,
low restriction, free flow of engine exhaust therethrough; and

27 at least one removable end attachment fitting, removably
28 securing at least said inlet end to said canister.

1 17. The exhaust sound and emission control system according
2 to claim 16, wherein said canister further comprises:

3 an outer wall;

4 an inner wall spaced from said outer wall, and defining an
5 acoustic insulation volume therebetween; and

6 acoustic insulation material disposed within said acoustic
7 insulation volume between said outer wall and said inner wall.

1 18. An exhaust sound and emission control system,
2 comprising:

3 an elongate external housing, having an inlet end and an
4 outlet end opposite said inlet end;

5 an inlet end plate and an outlet end plate, respectively
6 secured to and sealing said inlet end and said outlet end of said
7 housing and defining an interior volume therein;

8 an inlet pipe and an outlet pipe, respectively extending
9 from said inlet end plate and from said outlet end plate, and
10 communicating with said interior volume;

11 an inlet chamber, an intermediate chamber, and an outlet
12 chamber disposed within said housing, respectively communicating
13 with one another sequentially from said inlet pipe to said outlet
14 pipe and defining a sinusoidal primary exhaust gas passage
15 therethrough;

16 a first separator panel separating said inlet chamber from
17 said intermediate chamber;

18 a second separator panel separating said intermediate
19 chamber from said outlet chamber, said first separator panel and
20 said second separator panel each including a lateral exhaust gas
21 pressure balance passage therethrough, with each said pressure
22 balance passage defining an alternative gas passage path through
23 said interior volume; and

24 at least one catalytic converter element disposed within
25 said inlet end of said housing.

1 19. The exhaust sound and emission control system according
2 to claim 18, further including a plurality of catalytic converter
3 elements disposed within said inlet end of said housing.

1 20. The exhaust sound and emission control system according
2 to claim 18, further including at least one removable end
3 attachment fitting, removably securing at least said inlet end to
4 said housing.